

USSR

UDC 548.736.6

RASTSVETAYEVA, R. K., SIMONOV, V. I., and ACADEMICIAN BELOV, N. V., Institute
of Crystallography, USSR Academy of Sciences, Moscow

"Crystal Structure of Lomonosovite $\text{Na}_5\text{Ti}_2[\text{Si}_2\text{O}_7][\text{PO}_4]_2$ "

Moscow, Doklady Akademii Nauk SSSR, Vol 197, No 1, 1 Mar 71, pp 81-84

Abstract: Lomonosovite was discovered in 1936 by V. I. Gerasimov. Although considerable research has been devoted to the properties of this mineral, the results have remained largely unsatisfactory. The present research resulted in only slightly changed parameters for the triclinic unit cell of lomonosovite: $a = 5.44$, $b = 7.163$, $c = 14.83$ Å, $\alpha = 99^\circ$, $\beta = 105^\circ$, and $\gamma = 90^\circ$. The authors describe the structure of lomonosovite in detail and illustrate schematically in two figures the projection of the lomonosovite structure on the zz and yz planes in Pauling polyhedra. They describe the leaching out of lomonosovite and the problems involved therein. The basic structure of lomonosovite places it in the same series as several other minerals, but it differs from these minerals with respect to filling of the space between the walls. 2 figures, 1 table, bibliography of 17 titles.

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UDC 632.952:531.2

RASULEV, U. U., Scientific Research Institute of Plant Protection, Tashkent, IGAMBERDIYEV, KH., and DZHAMALOV, A., Surkhandar'inskaya Oblast Experimental Station

"Preparations Effective Against Macrosporiosis and Alternariosis in Fine-fibrous Cotton"

Moscow, Khimiya v Sel'skom Khozyaystve, Vol 9, No 6, 1971, pp 26-28

Abstract: In 1966-1969 zineb and polycarbazin in a 1.0 and 1.5-percent concentration were tested on fields of the Surkhandar'inskaya Oblast Experimental Station for control of macrosporiosis and alternariosis in fine-fibrous cotton. Cotton growth, development and yield were determined according to the Soyuz NIKhI [All-Union Scientific Research Institute of Cotton Growing] method. It was found that a two-stage spraying with a 15-percent emulsion of zineb and polycarbazin significantly reduces the extent to which the leaves and bolls of fine-fibrous cotton are affected with macrosporiosis and alternariosis. A one-percent suspension of Bordeaux mixture was found to be somewhat less effective than zineb and polycarbazin in the tested concentrations.

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1/2 022 UNCLASSIFIED
TITLE--STERICALLY HINDERED QUINAMINE -U- PROCESSING DATE--20NOV70
AUTHOR--(03)-YERSHEV, V.V., RASULEVA, D.KH., VOLDUKIN, A.A.
COUNTRY OF INFO--USSR
SOURCE--IZV. AKAU. NAUK SSSR, SER. KHIM. 1970, (4), 956-7
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--STEREOCHEMISTRY, IR SPECTRUM, UV SPECTRUM, CYCLOHEXANE,
ALKYNE, BRANCHED ORGANIC COMPOUND, AMINE DERIVATIVE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3006/1302 STEP NO--UR/0062/70/000/004/0956/0957
CIRC ACCESSION NO--AP0154976
UNCLASSIFIED

2/2 022 UNCLASSIFIED PROCESSING DATE--20NOV70
CIRC ACCESSION NO--AP0134976
ABSTRACT/EXTRACT--(U) GP-G- ABSTRACT. REACTION OF MORPHOLINE WITH
4-BROMO-2-METHYL-2,5-DI-TERT-BUTYL-2,5-CYCLOHEXADIEN-1-ONE GAVE THE
4-MORPHOLINE ANALOG, M. 103-40 DEGREES, WHICH WAS CHARACTERIZED BY ITS UV
AND IR SPECTRA. A REACTION SCHEME WAS GIVEN. FACILITY: INST.
KHIM. FIZ., MOSCOW, USSR.

UNCLASSIFIED

USSR

R
RASULEVA, M.A., Chair of Otorhinolaryngology, Andizhan Medical Institute

"The Effect of Organophosphorus Insecticides, Used for Treating Cotton on the Ear, Nose and Throat"

Tashkent, Meditsinskiy Zhurnal Uzbekistana, No 3, 1970, pp 48-50

Abstract: Most of the 35 patients coming to the clinic with cases of insecticide intoxication complained of vertigo, headache, nausea, vomiting, noises in the ears, and in a few cases, bleeding from the nose. They were cotton-field workers. The mode of intoxication was through the lungs. Physical examination showed various degrees of active congestion of the upper respiratory passages, mouth and even trachea. There were no visible changes in the drum membrane, but functional tests showed an impairment in both the cochlear and the vestibular apparatus, which was rather marked in chronic cases. Further studies showed that the insecticide is the only etiological factor in all the above cases.

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USSR

UDC 539.171.017

AZIMOV, S. A., MYALKOVSKIY, V. M., NURITDINOV, Kh., RASULKHOV, M. S.,
ABDULLAYEV, A. M., BEYSEMBAYEV, R. U., GAVRILIN, Ye. V., TALPOV, D. A.,
MULLAZHONOV, E. Zh., TILLAYEV, T., RAKHMANOV, Zh., UMEROV, R.,
ULIMAYEVA, F. A., KHEN, E., YULDASHBAYEV, T. S., Institute of Nuclear
Physics of the Academy of Sciences Uzbek SSR

"Study of the Characteristics of High-Energy Interactions of Pions and
Nucleons"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, Vol. 36,
No. 8, Aug 72, pp 1626-1631

Abstract: Experimental data obtained at the Kum-Bel' High-Altitude
Station of the Physicotechnical Institute of the Academy of Sciences
Uzbek SSR are reported. The station is 3200 m above sea level. The
setup contains three series of wide-gap spark chambers with effective
areas of 2 m² placed above and below the target. The Cerenkov spectro-
meter with total absorption and an ionization calorimeter with an area of
10 m² were used to measure the primary energy E_0 . Up to the present time
experimental data obtained over 630 hours of operation of the device have
been processed, with a high-voltage pulse being supplied to the electrodes of
the spark chambers. Showers with an energy of >200 Gev generated in the target
were selected for analysis. The following ratio was obtained for the number
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AZIMOV, S. A., et al., Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya,
Vol 36, No 8, Aug 72, pp 1626-1631

of primary charged N_c and neutral N_n particles: $N_c/N_n = 2.3 \pm 0.3$;
this shows that the proportion of charged particles is ~34% of all nuclear
active particles, thus making it possible to study pion-nuclear collisions
by comparing the characteristics of the interaction of charged and neutral
primary particles. A weak functional dependence between the inelasticity
coefficient $\langle K_{\pi e} \rangle$ and the atomic number of the target nucleus and a strong
functional dependence between this coefficient and the nature of the
primary particles were obtained for interactions of hadron with $E_0 > 200$
Gev. $\langle n_s \rangle$ is almost a logarithmic function of E_0 . The average multipli-
city in the interaction of pions with neutrons in paraffin is identical
within the experimental limit. A considerable azimuthal effect was ob-
served for the angular distribution of secondary particles. The azimuthal
effect has its greatest value for showers with $n_s = 8-15$, or a multipli-
city close to average.

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UDC 517.951

RASULOV, M. L. (Azerbaijan State University, imeni S. M. Kirov)

"Solution of the Cauchy Problem in the Theory of Elasticity for a System in an Arbitrary Region"

Minsk, *Differentsial'nyye Uravneniya* (Differential Equations), Vol. 6, No 9, September 1970, pp 1543-1551

Abstract: A method is given for applying a contour integral to the solution of the Cauchy Problem of a dynamic system in an arbitrary three-dimensional Euclidean space. Solutions exist for the problem in the form of a contour integral with respect to the complex parameter λ . The equations presented can be used for approximating solutions with an indication of probable error. The Fourier integral method can be applied to the problem if solutions are sought in the entire space. In this case the equations contain a triple integral instead of the single-contour integral given in this paper. Moreover, the contour integral method, in contrast to the Fourier method, is applicable to the solution of equations with variable coefficients. The elasticity theory system is written in matrix form as

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RASULOV, M. L., *Differentsial'nyye Uravneniya*, Vol 6, No 9, Sep 70, pp 1543-1551

$$\frac{\partial^2 v}{\partial t^2} = a^2 (\Delta_x + \tau d_x \partial'_x) v + f(x, t) \quad (1)$$

where $a^2 = \mu/\rho$, $\tau = (\lambda + \mu)/\mu$,

$$\partial_x = \begin{pmatrix} \partial/\partial x_1 \\ \partial/\partial x_2 \\ \partial/\partial x_3 \end{pmatrix}, \quad \partial'_x = (\partial/\partial x_1, \partial/\partial x_2, \partial/\partial x_3),$$

$$v = \begin{pmatrix} v_1 \\ v_2 \\ v_3 \end{pmatrix}, \quad f = \begin{pmatrix} f_1 \\ f_2 \\ f_3 \end{pmatrix}, \quad \text{and } \lambda, \mu \text{ are Lamé constants.}$$

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RASULOV, M. L, *Differentsial'nyye Uravneniya*, Vol 6, No 9, Sep 70, pp 1543-1551

Region D is a Euclidean three-dimensional space E_3 of points $x = (x_1, x_2, x_3)$. If D does not coincide with E_3 , its boundary is one or more Lyapunov-type surfaces. The Cauchy problem is studied for system (1) under the initial conditions

$$v(x, 0) = \Phi_0(x), \quad v'_t(x, 0) = \Phi_1(x), \quad x \in D \quad (2)$$

Four theorems (two or bounded and two for unbounded D) are given and proved for problems (1) - (2). Analogous results are obtainable for plane problems when suitable matrixes are used. Orig. art. has 3 refs.

USSR

UDC 517.951

RASULOV, M. L., Azerbaydzhan State University imeni S. M. Kirov

"Effective Solution of the Cauchy Problem for the System of Equations for Viscous-Plastic Media"

Minsk, Differentsial'nyye Uravneniya, Vol. 8, No. 6, Jun 72, pp 1026-1035

Abstract: The following system of Hencky-Il'yushin differential equations characterizing the motion of viscous-plastic media having the vector form

$$\frac{\partial \vec{v}}{\partial t} = \vec{K} - \frac{1}{\rho} \text{grad } \bar{p} - \frac{1}{\rho} \left(\eta + \frac{\tau_0}{h} \right) \times \\ \times \left[\Delta \vec{v} + \left(\frac{1}{3} - \frac{2}{3} \frac{\tau_0}{h(\tau_0 + h\eta)} \right) \text{grad div } \vec{v} - \frac{2\tau_0 T}{\rho h^2} \text{grad } h \right] \quad (1)$$

is discussed: \vec{v} is the velocity vector with components

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RASULOV, M. L., *Differentsial'nyye Uravneniya*, Vol. 8, No. 6, Jun 72, pp 1026-1035

v_k ($k = 1, 2, 3$); \vec{K} is the mass force; \vec{P} is the surface force; and ρ, τ_0, η, T are physical constants.

$$h = \sqrt{\left(\frac{\partial v_1}{\partial x_2} + \frac{\partial v_2}{\partial x_1}\right)^2 + \left(\frac{\partial v_1}{\partial x_3} + \frac{\partial v_2}{\partial x_1}\right)^2 + \left(\frac{\partial v_2}{\partial x_3} + \frac{\partial v_3}{\partial x_2}\right)^2 + 2 \sum_{k=1}^3 \left(\frac{\partial v_k}{\partial x_k}\right)^2}$$

If the sum of the first, second, and last terms on the right side of (1) reduce to a constant term of the differential equation (1) and the sum is denoted by $f(x, t)$, Equation (1) is then written in matrix form

$$\frac{\partial v}{\partial t} = a^2 (\Delta v + \tau \partial \partial' v) + f(x, t), \quad (2)$$

where

$$a^2 = \frac{1}{\rho} \left(\eta + \frac{\tau_0}{h} \right), \quad \tau = \frac{1}{3} - \frac{2\tau_0}{3h(\tau_0 + \eta)}$$

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FASULOV, M. L., *Differentsial'nyye Uravneniya*, Vol. 8, No. 6, Jun 72, pp 1026-1035

$x = (x_1, x_2, x_3)$, $\partial' = (\partial/\partial x_1, \partial/\partial x_2, \partial/\partial x_3)$, and ∂ is the corresponding column of the differential operators $\partial/\partial x_k$ ($k = 1, 2, 3$). It is noted that the fundamental matrix of the solution of the corresponding homogeneous system with fixed coefficients is of great value in both the Cauchy problem and the mixed problem for equation (2). It is assumed that α, τ are constants greater than zero. In this paper a fundamental matrix is constructed for the solutions of system (2) on the assumption that α and τ are constant and that (2) is parabolic in the Petrovskiy sense. With these assumptions the Cauchy problem for system (2) is solved for the initial condition

$$v(x, 0) = \phi(x)$$

(3)

in a certain region D of Euclidean space E_3 .

USSR

UDC 553.981.6(749.24)

~~RASULOY, M. N.~~ and KARASEV, A. V., Caspian Sea Petroleum Exploration Trust,
Cheleken MURB

"The Zhdanov Bank -- a New Gas-Condensate Field in the Caspian Sea"

Moscow, Neftegazovaya Geologiya i Geofizika, No 5, 1972, pp 3-5

Abstract: The article describes the sequence of research on the maritime area of the Zhdanov bank by deep exploratory drilling. The stratigraphy, lithology, tectonics, and the petroleum and gas content of the structure were defined with greater precision. Industrially significant deposits of gas and condensate were discovered. The rapid initiation of industrial development of the Zhdanov bank deposit will permit a considerable increase of oil and gas production in the Turkmen SSR. 2 figures. 1 table.

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USSR

UDC 550.423:551.311.231(575.1)

RASHILOV SH. K., Tashkent State University imeni V. I. Lenin

"Geochemistry of Niobium, Tantalum, and Titanium in the Weathering Products of the Granitoid Crust of Karnab Massif (West Uzbekistan)"

Tashkent, Uzbekskiy geologicheskii zhurnal, No 1, 1972, pp 97-100

Abstract: A study on the distribution of niobium, tantalum, titanium, iron, and other elements in the granitoid crust of the weathering products of Karnab revealed the behavioral features of these elements in the process of rock hypergenesis. The study covered the biotite granites of the Karnab intrusive and their mantle waste -- crude kaolins. It was found that the contents of niobium and tantalum pentoxides are much greater in the crust's weathering products than in the source rock, indicating the mobility of both niobium and tantalum during hypergenesis. The presence of considerable quantities of niobium and tantalum-containing rutile as well as of hematite in the kaolinite zone of the mantle waste permits the assumption that they had emerged as a result of the decay of biotites -- the basic carrier of Nb, Ta, Ti, and Fe in the Karnab massif. The low Nb and Ta contents in the rock and their low solubility in water obviates the possibility of large concentrations of their re formations in the upper kaolinite zone of the weathering crust. (3 tables, 5 bibliographic references)

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USSR

UDC 632.95

KULIYEV, A. M., GASANZADE, G. R., RASULOVA, M. A., ALIYEVA, R. G., and RASULOVA, F. A., Institute of Additive Chemistry of the Academy of Sciences Azerbaijan SSR

"Method of Producing Alkoxymethyl Esters of Dialkyldithiocarbamic Acids"
USSR Authors' Certificate No. 316687, Cl. C 07 c 135/04, filed 17 Dec 69,
published 23 Dec 71 (from RZh-Khimiya, No 14, 25 Jul 72, Abstract No 14N470
by T. A. Belyayeva)

Translation: Carbamic acid derivatives of the formula $ROCH_2SSCNEt_2$ (I)
(R = alkyl or benzyl) which can be employed as pesticides are obtained by the
reaction of alkali-metal salts of dialkyldithiocarbamic acids with the alpha-
chloroether of aliphatic and aromatic alcohols in an organic solvent at 70-80°. One mole of alpha-chloroisobutyl ether is added to 1 mole of $Et_2NCSSNa$ in
 C_6H_6 at 70-80°, held for 5-8 hours, washed with water and dried; I is isolated
by distillation (R = iso-Bu), yield 90-95%, boiling point 122-60/1, d_4^{20} 1.0393,
 n_D^{20} 1.5375. The following I's are similarly produced (cited hereinafter are
R, boiling point in °C/mm, d_4^{20} , n_D^{20}): Bu, 136-7/1, 1.0460, 1.5420, C_5H_{11} ,
154-5/3, 1.0321, 1.5368; C_6H_{13} , 153-4/1, 1.0178, 1.5300; C_7H_{15} , 163-4/1, 1.0073,
1.5278, $PhCH_2$, 177-8/0.7, 1.1297, 1.5798
1/1

USSR

UDC: 537.226.31:546:23

ABDULLAYEV, G. B., Corresponding Member of the Academy of Sciences,
USSR; IMANOV, L. M.; RASULOVA, M. A.

"Investigating Dielectric Relaxation in Selenium"

Baku, Doklady Akademii Nauk Azerbaydzhanskoy SSR, vol 28, No 5,
1972, pp 20-24

Abstract: Asserting that investigation of the dielectric characteristics of semiconductors within broad limits of frequency and temperature variation can turn up useful information concerning the nature of weakly bonded charge carriers, the authors present the results of their investigation into the dielectric relaxation of partially crystallized selenium and selenium specimens doped with thallium. The dielectric permeability and absorption factor of the pure selenium were measured at five frequencies in the range of 0.06 to 5.3 MHz and in the temperature interval of 20 to -100°C. The dielectric coefficients of the selenium doped with 0.01% by weight of thallium were measured in the same temperature interval at eight frequencies in the 0.06-16 MHz range. The measurements were conducted by resonance methods with an error of less than 5%. Results are given in tabular and curve form.

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USSR

UDC 632.95

KULIYEV, A. M., GASANZADE, G. R., ~~RASULOVA, M. A.~~ ALIYEVA, R. G., and
RASULOVA, F. A., Institute of Additive Chemistry of the Academy of Sciences
Azerbaijdzhan SSR

"Method of Producing Alkoxyethyl Esters of Dialkyldithiocarbamic Acids"
USSR Authors' Certificate No 316687, Cl. C 07 c 135/04, filed 17 Dec 69,
published 23 Dec 71 (from RZh-Khimiya, No 14, 25 Jul 72, Abstract No 141470
by T. A. Belyayeva)

Translation: Carbamic acid derivatives of the formula $\text{ROCH}_2\text{SSCNet}_2$ (I)
(R = alkyl or benzyl) which can be employed as pesticides are obtained by the
reaction of alkali-metal salts of dialkyldithiocarbamic acids with the alpha-
chloroether of aliphatic and aromatic alcohols in an organic solvent at 70-80°. One mole of alpha-chloroisobutyl ether is added to 1 mole of Et_2NCSSNa in
 C_6H_6 at 70-80°, held for 5-8 hours, washed with water and dried; I is isolated
by distillation (R = iso-Bu), yield 90-95%, boiling point 122-60/1, d_4^{20} 1.0393,
 n_D^{20} 1.5375. The following I's are similarly produced (cited hereinafter are
R, boiling point in °C/mm, d_4^{20} , n_D^{20}): Bu, 136-7/1, 1.0460, 1.5420, C_5H_{11} ,
154-5/3, 1.0321, 1.5368; C_6H_{13} , 153-4/1, 1.0178, 1.5300; C_7H_{15} , 163-4/1, 1.0073,
1.5278, PhCH_2 , 177-8/0.7, 1.1297, 1.5798
1/1

USSR

KALANTAROV, M. I., KELIKOVA, T. A., and RASULOV, N. E., Baku

"Investigation of the Effects of a Magnetic Field on the Quality of Cotton Fibers"

Kishinev, Elektronnaya Obrabotka Materialov, No 2, 1971, pp 68-71

Abstract: Cotton fibers were kept in a rotating magnetic field of 400 to 800 a/cm for 1 to 10 minutes, with relative humidity ranging from 65 to 80%. In all cases, this treatment enhanced the tensile strength of the cotton fibers, with the maximum increase of 0.2-0.3 g observed after 3 minutes of exposure. Follow-up tests demonstrated that this improvement was durable. Infrared spectroscopy of the fibers revealed shifts in maximum absorption bands, and x-ray analysis showed a greater degree of polarization of the polymers (up 2-4%) after the treatment. The feasibility of applying this method in industry is being investigated.

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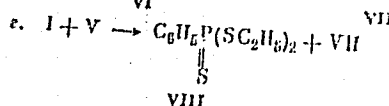
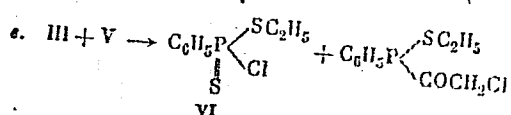
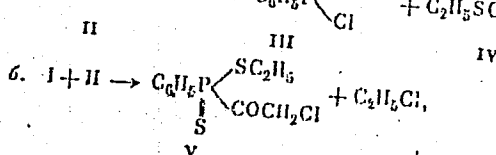
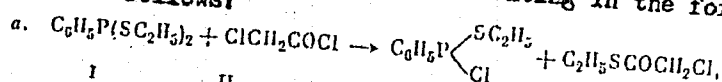
UDC 547.26'118

KRASIL'NIKOVA, YE. A., ORLOVA, G. V., MOSKVA, N. A., and RASUMOV, A. I.,
Kazan Chemical Technological Institute imeni S. M. Kirova

"The Reaction of the Diethyl Esters of Phenylthiophosphonous Acid with
Chloroacetic Acid Chloride"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), Vyp 11, 1972 pp 2578-1579

Abstract: The title reaction results in a complex mixture of products.
Products of the initial reaction may react further resulting in the formation
of a number of compounds as follows:



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KRASIL'NIKOVA, YE. A., et al., Zhurnal Obshchey Khimii, Vol 42(104), Vyp 11, 1972, pp 1578-1579

Products were separated on a chromatographic column and analyzed by IR, NMR, and PMR spectra.

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UDC 632.95'

GRAPOV, A. F., MEL'NIKOV, N. N., ANDREYEVA, YE. I., RASVODOVSKAYA, L. V.,
PRONCHENKO, T. S., USMANOV, M. T., MIKHAYLOVA, O. B., SMIRNOVA, K. F., and
ZBARSKIY, F. SH.

USSR Authors' Certificate No 276572, Cl. Aol n 9/36, filed 13 Jan 69,
published 11 Feb 72 (from RZh-Khimiya, No 20, 25 Oct 72, Abstract No 20N582
by T. A. Belyayeva)

Translation: In order to widen the assortment of effective fungicides for
controlling cotton wilt, it is suggested that use as systemic fungicides
be made of asymmetric diamides and amidohydrazides of alkylphosphonic and
alkylthiophosphonic acids of the formula $R'R''N(R)P(X)(NH)_nR'''(I)$ (R and R'
= alkyl; R'' = H or alkyl; R''' = unsubstituted or substituted phenyl; n = 1
or 2; X = O or S). I is obtained from amines or hydrazides and alkylphos-
phonic or alkylthiophosphonic acid chlorides. The preparations were tested
under field conditions on naturally infected plants. Experimental results
showed that, as compared with control, I possesses definite systemic activity,
suppressing the development of cotton wilt. Data are presented on tests of
I in comparison with phosbutyl.

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USSR

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VORONIN, L., Corresponding Member, Academy of Sciences USSR, Head, Chair of Higher Nervous Activity, Soil Biology Faculty, Moscow State University; Chairman of the Commission, SMIRNOV, M., Candidate of Physicomathematical Sciences, Senior Scientific Associate, Institute of Problems of Information Transmission, Academy of Sciences USSR, RATANOVA, T., Candidate Pedagogical Sciences, Senior Scientific Associate, Laboratory of Perception and Sensation, Institute of Psychology, Academy of Pedagogical Sciences, DASHEVSKIY, I., Doctor-Psychiatrist, Psycho-Neurological Dispensary No 2, Moscow, and KNORRE, V., Candidate of Technical Sciences

"Mysterious Phenomenon: Discovery or Error" — Once More on the Rosa Kuleshova Effect"

Moscow, Literaturnaya Gazeta, No 31, 29 Jul, p 12

Abstract: Optical perception through touch has been discussed and disputed by scientists during the last ten years. The authenticity of the claim of R. A. Kuleshova to be able to distinguish between the colors of objects by touching them has been established. However, it has been impossible to establish experimentally more data on this phenomenon, because it is impossible to obtain a high percentage of correct answers, since simple random selection is also involved. A commission set out to reexamine the case of R. A. Kuleshova.

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VORONIN, L., et al, Literaturnaya Gazeta, No 31, 29 Jul 70, p 12

Another series of tests was run to overcome this disadvantage by excluding the ordinary sense of touch. In the first set of tests a plywood baffle of 1.5 x 1.5 m with openings and sewn-in sleeves for the hands of the person to be tested was used. Seven correct color identifications out of a possible 23 were achieved in the first round, involving pencils and studs of the five prime colors. Subsequent rounds were even less favorable.

In a second test series, the person to be tested had his face covered with opaque material. The objects to be tested were reproductions of paintings. In all experiments in which the sense of sight was carefully excluded, R. A. Kuleshova did not exhibit any unusual faculty.

In a third series of tests, R. A. Kuleshova was blindfolded. In this case, she felt capable of sensing colors and gave correct and accurate answers. She described in detail the subjects on pictures, with accurate indication of colors, and fluently read printed text.

The spectro-anomaloscopic tests run in 1963 and 1964 were repeated. This device is capable of producing monochromatic light of four different colors. In 10
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VORONIN, L., et al, Literaturnaya Gazeta, No 31, 29 Jul 70, p 12

tests, only twice did the test subject arrive at the correct answer. Such a result can be expected from anyone. To examine the discrepancy in the results obtained previously and those obtained now, the commission decided to check into the 1963-1964 tests. It was found that when the device switched from one color to the next, a certain noise from the mechanical movement of parts of the device could provide the test person with information about the color shown. In the new test run, all such movements had been eliminated. The commission came to the conclusion that R. A. Kuleshova uses the same methods used by artists who claim that they see "without the help of eyes," using a narrow slit between the lower edge of the band covering the eyes and the nose. The commission believes that, at least today, no special optical sense is exhibited by R. A. Kuleshova. Of the thousands of other such cases claimed, the commission considers it unlikely that any of these do in fact possess the ability of an optical sense activated by touch.

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172 013
UNCLASSIFIED
TITLE--KINETICS OF TRIMETHYLOLPROPANE SYNTHESIS ON THE ANION EXCHANGE
RESIN AV-17-8 -U-
AUTHOR--(03)--KETSLAKH, M.M., RATANOVA, A.I., RUDKOVISKIY, D.M.
PROCESSING DATE--09OCT70
COUNTRY OF INFO--USSR
SOURCE--NEFTEKHIMIYA 1970, 10(1), 88-95
DATE PUBLISHED--70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--REACTION KINETICS, CHEMICAL SYNTHESIS, PROPANE, ANION EXCHANGE
RESIN, METHANOL/(U)AN17 8 ION EXCHANGE RESIN
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/1888
CIRC ACCESSION NO--AP0112608
STEP NO--UR/0204/70/010/001/0088/0095
UNCLASSIFIED

2/2 013

CIRC ACCESSION NO--AP0112868

UNCLASSIFIED

PROCESSING DATE--09OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TITLE SYNTHESIS PROCEEDS IN 3
 STEPS: PRCHO (I) PLUS CH SUB2 O (QH PRIME NEGATIVE) YIELDS ETC(CH SUB2
 OH)CHO (III); II PLUS CH SUB2 O (QH PRIME NEGATIVE) YIELDS ETC(CH SUB2
 OH) SUB2 CHO (III); III PLUS CH SUB2 O PLUS OH PRIME NEGATIVE YIELDS
 ETC(CH SUB2 OH) SUB3 (IV) PLUS HCO SUB2 PRIME NEGATIVE (RATE DETG.; V
 SUB1 EQUALS D (IV)-DT EQUALS K SUB1 (III) (CH SUB2 O) (ANEX)),
 ACCOMPANIED BY: 2CH SUB2 O PLUS OH PRIME NEGATIVE YIELDS MECH PLUS HCO
 SUB2 PRIME NEGATIVE (V SUB2 EQUALS D(MEOH)-DT EQUALS K SUB2 (CH SUB2 O)
 PRIME2 (ANEX)), AND OTHER MINOR SIDE REACTIONS. OPTIMUM STATIC
 CONDITIONS WERE: 50DEGREES, 30 MIN CONTACT TIME, MOL. RATIO I: ANEX
 EQUALS 1-1.58 (ANEX EQUALS ANION EXCHANGE RESIN). THE KINETICS WERE
 MEASURED AT 20-50DEGREES AND FOLLOWING EQUATIONS WERE DERIVED: K SUB1
 EQUALS 7.62 TIMES 10 PRIME11 EXP (MINUS 17230-RT), AND K SUB2 EQUALS
 8.74 TIMES 10 PRIME16 EXP (MINUS 25900-RT). FACILITY: VSES.
 NAUCH. ISSLED. INST. NEFTEKHIM. PROTSESSOV, LENINGRAD, USSR.

UNCLASSIFIED

Polymers and Polymerization

USSR

UDC 541.64:547.419

DAVANKOV, A. B., (deceased), LEYKIN, Yu. A., RATAYCHAK, V., and KORSHAK, V. V., Moscow Chemico-Technological Institute imeni D. I. Mendeleev, Moscow

"Synthesis and Study of Polymeric Complex-Forming Agents with Aminoethylphosphonic Acid Groups"

Moscow, Vysokomolekulyarnyye Soyedineniya, Vol 15, No 6, Jun 73, pp 1203-1214

Abstract: A macroporous chloromethylated styrene-divinylbenzene copolymer with 20% divinylbenzene that contained 17.7-18.2% Cl was aminated with N,N-dialkyl-beta-aminoethylphosphonic acid diethyl esters $R_2N(CH_2)_2P(O)(OEt)_2$ (I; R = Me, Et). At high temperatures and in polar solvents, conversion of the initially introduced diester groups to monoester groups took place by the mechanism $-CH_2\overset{Cl}{\underset{+}{N}}R_2-(CH_2)_2-P(O)(OEt)_2 \xrightarrow{-RCl} -CH_2NR_2(CH_2)_2-P(O)(OEt)_2$. Amination with I (R = Me) proceeded more effectively and with a higher yield than that with I (R = Et). In a side reaction,

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USSR

DAVANKOV, A. B., et al., Vysokomolekulyarnyye Soyedineniya, Vol 15, No 6, Jun 73, pp 1203-1214.

monoester groups that had been introduced into the copolymer reacted with chloromethyl groups under formation of phosphonic acid benzyl esters that contained a readily hydrolyzable C-O-P link. Tests with the aminated copolymer that contained monoester groups and was obtained upon the reaction with I(R = Me) showed that the product of this reaction acted as a selective chelating agent adsorbing preferentially UO_2^{++} cations from HNO_3 solutions in the presence of Ca^{++} , Co^{++} , and Fe^{3+} .

2/2

- 88 -

RATENBERG, S.A.

So. IRES 5827
14 June 75

OBTAINING SILICON EPITAXIAL FILMS BY THE SILANE METHOD

Article by S. A. Ratenberg, R. M. Vengulova, N. L. Vengulova, Novosibirsk, USSR
Bessy Porcia, A. STIKHINA, Homokhale, Chukotka, USSR
Simpliciter, Russian, Part 2, 1969, pp 116-121

Epitaxial films of silicon are obtained by three chemical methods: by transport reaction, reduction of the halide compounds and thermal decomposition of silane [1-3]. The silane method has a number of advantages among which temperatures which offer the possibility of obtaining thin high-resistance films with a sharp diffusion transition. The danger of the explosion of silane mixtures is eliminated by using cylinders with a mixture of silane with silane. In the case of low silane content in the hydrogen (2-5 percent), the mixture is not pyrophoric [5].

The article contains a discussion of the results of the theoretical and experimental study of the reaction of thermal decomposition of silane in order to obtain high-quality epitaxial films.

The dynamics of the process

The basis for the silane method is the reaction



A detailed thermodynamic investigation of reaction (1) has not as yet been performed. It is known [3] only that in the temperature range of 300-1600° K the standard free energy of the reaction is negative. The dependence of the equilibrium constant K_p of the reaction (1) on the temperature T calculated by the thermodynamic data of [6] is expressed by the equation

$$\lg K_p = -\frac{13372}{T} + \frac{R_{\text{Si}}}{1.987} \lg T - \frac{R_{\text{Si}}}{27.45} \lg T^2 + \frac{R_{\text{Si}}}{9.15} \lg T^3 + 6.1$$

- 97 -

(2)

Microbiology

USSR

UDC 576.851.252.097.29

RATGAUZ, G. I., Institute of Epidemiology and Microbiology imeni Gamaleya,
Academy of Medical Sciences USSR

"Formation and Secretion of Alpha-Toxin by Staphylococci"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, Vol 10, Oct
70, pp 37-41

Abstract: Staphylococcus strains are customarily categorized as toxigenic and nontoxigenic according to the amount of alpha-hemolysin they secrete. However, secretion of a toxin is only an indirect manifestation of its formation inside the cell. It is thus possible for nontoxigenic strains to synthesize alpha-hemolysin but to be incapable of secreting it. The toxin may be attached to some intracellular structures (e. g., ribosomes). In view of this consideration, a study was performed to determine the concentration of alpha-toxin in the culture liquid and inside the cells of the bacteria, using a method previously described by Shemanov. The tests were performed on a nontoxigenic strain obtained from the nasal mucosa of a healthy man and on toxigenic Staphylococcus aureus obtained from a patient with mastitis. In the toxigenic strain cultures, alpha-hemolysin was found in the culture
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USSR

RATGAUZ, G. L., Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, Vol 10, Oct 70, pp 37-41

liquid within 3 to 9 hours and in the hyaloplasm within 5 hours after incubation. No alpha-hemolysin was found in the cytoplasm of the nontoxigenic strain, a fact which indicated that the latter strain was unable to synthesize alpha-hemolysin.

2/2

1/2 017
UNCLASSIFIED
TITLE--SUBMICROSCOPIC STRUCTURE OF STAPHYLOCOCCUS IN THE PROCESS OF
TOXINOGENESIS -U-
AUTHOR--(02)--PAVLOVA, I.B., RATGAUZ, G.L.
COUNTRY OF INFO--USSR
SOURCE--ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, 1970, NR 3,
PP 85-88
DATE PUBLISHED--70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--STAPHYLOCOCCUS MORPHOLOGY, CYTOPLASM, BACTERIAL TOXIN
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1990/1475
CIRC ACCESSION NO--AP0109535
STEP NO--UR/0016/70/000/003/0085/0088
UNCLASSIFIED

2/2 017

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0109535
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE AUTHORS STUDIED THE SUBMICROSCOPIC STRUCTURE OF HIGHLY TOXIGENIC STRAINS OF STAPHYLOCOCCUS AND OF THOSE WITH LOW TOXIGENICITY. IT WAS SHOWN THAT MORPHOLOGICAL DIFFERENCES WERE ALSO PRESENT BETWEEN THE STRAINS WHICH DIFFERED FUNCTIONALLY; THESE MORPHOLOGICAL DIFFERENCES WERE EXPRESSED IN THE FORMATION UNDER THE CELLULAR WALL OF SLITS AND LACUNAE FILLED WITH AMORPHOUS MATERIAL OF LOW ELECTRON OPTIC DENSITY, AS WELL AS IN INTENSIVE DEVELOPMENT OF INTRACYTOPLASMATIC MEMBRANOUS STRUCTURES IN THE PERIPHERAL AREAS OF THE CELLS OF A HIGHLY TOXIGENIC STRAIN. INTRACYTOPLASMATIC MEMBRANOUS STRUCTURES WERE OFTEN UNASSOCIATED WITH FORMATION OF CROSS SEPTI. DISCHARGE OF THE TOXIN INTO THE MEDIUM DURING THE TOXIN FORMATION WAS NOT ACCOMPANIED BY PHENOMENA OF GENERAL LYSIS.

UNCLASSIFIED

USSR

R UDC: 576.8.095.5:575.116.7

PAVLOVA, I.B. and RATGAUZ, G.I., Institute of Epidemiology and Microbiology
imeni Gamaleya, Academy of Sciences USSR, and Institute of Experimental
Biology, Academy of Medical Sciences USSR

"The Submicroscopic Structure of Staphylococci During Toxin Formation"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 3, 1970,
pp 85-88

Abstract: Electron microscope studies of a highly toxigenic (No. 5) and a weakly toxigenic (No. 1464) Staphylococcus strains were conducted to determine whether the functional differences between the strains reflected differences in the ultrastructure. Six-day-old and especially two-and four-day old cultures of the highly toxigenic strain were characterized by a partial separation of the cytoplasmatic membrane from the cell wall, and formation of cracks and lacunae filled with a substance of low electron density. There were also well-developed membranous structures along the periphery of the cells. On the other hand, in most of the cells of the weakly toxigenic strain at the same stage of cultivation, a fibrillar substance uniformly distributed on the surface of the cell wall could be seen. Moreover, the partial separation of the cytoplasmatic membrane, presence of cracks and lacunae and membranous structures along the periphery observed in the toxigenic strain were not evident in these cells.

1/1

1/2 019
UNCLASSIFIED
TITLE--THERMODYNAMIC PROPERTIES OF BINARY OXIDE SYSTEMS AT HIGH
TEMPERATURES. II. DETERMINATION OF GIBBS FREE ENERGIES OF FETO SUB3
AUTHOR--(03)--LEVITSKIY, V.A., POPOV, S.G., RATTANI, D.D.
PROCESSING DATE--27NOV70
COUNTRY OF INFO--USSR
SOURCE--ZH. FEZ. KHIM. 1970, 44(5), 1337-8
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--FREE ENERGY, ELECTRODE POTENTIAL, ELECTROLYTIC CELL, TITANIUM
OXIDE, TITANATE, IRON COMPOUND, IRON OXIDE, ELECTROCHEMICAL ANALYSIS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3006/1410
STEP NO--UR/0076/70/044/005/1337/1338
CIRC ACCESSION NO--AP0135084
UNCLASSIFIED

2/2 019

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0135084

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT.

THE EMF. OF THE CELL PT-FE, TIO
SUB2, FETIO SUB3-O PRIME2NEGATIVE(PE SUBO.950, FE-PT WAS MEASURED TO
DET. THE FREE ENERGY OF FORMATION OF FETIO SUB3 FROM OXIDES AT HIGH
TEMPS. DELTAG (CAL) EQUALS MINUS 7320 PLUS 2182TAU.
FACILITY:
MOSK. GOS. UNIV. IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

026

UNCLASSIFIED

PROCESSING DATE--30OCT70

TITLE--DETERMINATION OF THE AVERAGE EFFECTIVE RADIUS OF EVAPORATION
CENTERS IN THE NUCLEATE BOILING OF LIQUIDS -U-
AUTHOR--(03)-RATIANI, G.V., SHEKRILADZE, I.G., MAGRAKVELIDZE, T.SH.

COUNTRY OF INFO--USSR

SOURCE--SOOBSHCH. AKAD. NAUK GRUZ. SSR 1970, 57(1), 137-40

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--NUCLEATE BOILING, PHASE EQUILIBRIUM, SURFACE TENSION,
NUCLEATION, ETHANOL, BENZENE, CONIC BODY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1996/1451

CIRC ACCESSION NO--AP0118440

STEP NO--UR/0251/70/057/001/0137/0140

UNCLASSIFIED

2/2 026

CIRC ACCESSION NO--AP0118440

UNCLASSIFIED

PROCESSING DATE--30OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DEPENDENCE OF THE AV. EFFECTIVE RADIUS, P_0 , OF EVAPG. CENTERS ON THE PROPERTIES OF THE SOLID LIQ. INTERFACE WAS STUDIED. FOR A CONE, ANGLE 2β , FOR THE CASE WHEN θ IS SMALLER THAN θ IS SMALLER THAN β , WHERE θ IS THE WETTING ANGLE, THE GEOMETRIC REPRESENTATION GAVE P_0 EQUALS $(R \text{ MINUS } L \text{ SUBWET SIN } \beta) - \cos \beta - \theta$, WHERE $L \text{ SUBWET}$ IS THE LENGHT OF THE WETTED SIDE OF THE CONE, CAN BE REPLACED BY $R \cos \theta$, WHERE $U \text{ SUB9}$ IS THE RATE OF WETTING AT θ EQUALS 0 AND γ IS THE TIME BETWEEN A RISING BUBBLE AND THE FORMING OF THE NEXT BUBBLE. ON THE BAIS OF THIS RELATION, WITH INCREASE IN HEATING ASSOCD, WITH A DECREASE OF γ , $P \text{ SUB0}$ INCREASED, WHEREAS R AND θ REMAINED CONT. THIS WAS CONFIRMED WITH ETOH AND C SUB6 H SUB6 ON SURFACES WITH DIFFERNT CONES AS EVAPN. CENTERS. WHEN θ IS SMALLER THAN β , THE SLOPE OF THE EVAPN. CURVE IS HIGHER.

UNCLASSIFIED

USSR

FIL'TS, R. V., RATICH, O. D.

UDC 621.3.011.1

"Harmonic Linearization of Nonlinear Elements"

Novocherkassk, Izvestiya vysshikh uchebnykh zavedeniy, Elektromekhanika, No 1, 1972, pp 16-23

Abstract: Analytical expressions for the differential parameters of nonlinear elements characterizing their behavior in the presence of small harmonic variations in the operating conditions are derived under the assumptions corresponding to the conditions of harmonic linearization of nonlinear elements operating under the conditions of symmetric periodic oscillations. The application of the proposed parameters is illustrated in two examples -- calculation of the volt-ampere characteristics of the periodic conditions of nonlinear circuits and determination of the aperiodic instability of their steady-state conditions.

The approximation of the characteristics of the nonlinear elements by the method of harmonic linearization communicates the basic properties characterizing the behavior of the nonlinear elements for small harmonic variations of their operating conditions. These properties are described mathematically by differential parameters of the harmonic regime defined by the proposed analytical expressions. In calculating the characteristics of nonlinear

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USSR

FIL'TS, R. V., et al., Izvestiya vysshikh uchebnykh zavedeniy, Elektromekhanika,
No 1, 1972, pp 16-23

circuits operating in the periodic regime, these parameters permit the application of an efficient algorithm based on numerical integration of a system of nonlinear differential equations describing the calculated characteristics by the Euler method. The problem is best solved on a digital computer. The algorithm does not use successive approximations and, consequently, the problem of convergence of the calculation process is nonexistent. It is especially efficient as applied to complex circuits with many nonlinear elements where the convergence conditions complicate the application of iteration methods. The application of the proposed parameters of nonlinear elements leads to a simple and convenient method of determining the stability of the equilibrium points of the periodic regimes of nonlinear circuits. Whereas the determination of the conditions of aperiodic instability of complex circuits by analyzing their differential equations by the method proposed by Van der Pool for a second-order equation requires an individual approach to each structure of the electric circuit, the described method is the same for circuits of any order and with any number of nonlinear elements.

2/2

- 19 -

1/2 023

UNCLASSIFIED

PROCESSING DATE--20NOV70

TITLE--INCREASE IN THE PHYSICOMECHANICAL PROPERTIES OF CONCRETE HARDENING
AT SUBZERO TEMPERATURES -U-

AUTHOR--(05)-GORBONOS, YE.P., GOGIN, V.F., KONKIN, A.P., GORBONOS, A.D.,
RATINOV, V.B.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 267,425

REFERENCE--GTKRYTIYA, IZJBRET., PROM. CBRAZTSY, TOVARNYE ZNAKI 1970,

DATE PUBLISHED--01APR70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--CONCRETE, COLD HARDENING, LOW TEMPERATURE EFFECT, CALCIUM
COMPOUND, PATENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3002/1415

STEP NO--UR/0482/70/000/000/0000/0000

GIRC ACCESSION NO--AA0128814

UNCLASSIFIED

2/2 023

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AA0126814

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE PHYSICOMECH. PROPERTIES OF COLD CONCRETE WERE INCREASED BY INTRODUCING COMPLEX ADDITIVES INTO THE CONCRETE MIXT. TO SPEED UP THE HARDENING OF CONCRETE AT MINUS 25DEGREES AND COMBINED WITH THE THERMOS METHOD AT MINUS 50DEGREES, A MIXT. OF CACL SUB2 AND CA NITRITE NITRATE 7-25PERCENT ON THE WT. OF THE MIXING WATER WAS USED FOR THE ADDITIVE.

UNCLASSIFIED

1/2 011
UNCLASSIFIED
TITLE--REACTION OF HYDROXIDES OF ALKALI AND ALKALINE EARTH METALS WITH
ACTIVE SILICA -U-
AUTHOR--(02)-ANATSKIY, F.I., RATINOV, V.B.
PROCESSING DATE--27NOV70
COUNTRY OF INFO--USSR
SOURCE--ZOVD. LAB. 1970, 36(3), 283-5
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--HYDROXIDE, SILICA, ALKALINE EARTH METAL, CHEMICAL REACTION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3001/2100
CIRC ACCESSION NO--AP0127473
STEP NO--UR/0032/70/036/003/0283/0285
UNCLASSIFIED

2/2 011
CIRC ACCESSION NO--AP0127473 UNCLASSIFIED
ABSTRACT/EXTRACT--(U) GP-0- PROCESSING DATE--27NOV70
PRESSED ACTIVE SILICA IN 0.01N NaOH WAS DETD. AT 23-88DEGREES BY USING
THE ROTATING DISK METHOD. THE DISSOLN. CURVES WERE SLIGHTLY CONCAVE
BELOW 55DEGREES, BUT BECAME LINEAR ABOVE 55DEGREES. THE TEMP.
DEPENDENCE OF THE NONLINEAR CURVES COULD BE REPRESENTED BY 2 ARRHENIUS
ACTIVATION ENERGIES, 14.7 AND 13.5 KCAL./MOLE, INDICATING THE PRESENCE
OF BOTH KINETIC AND DIFFUSIVE DISSOLN. MECHANISMS. THE DISSOLN. OF
SIMILAR CA(OH) SUB2 DISKS IN AQ. SILICIC ACID, HOWEVER, WAS LIMITED BY
DIFFUSION THROUGH A SURFACE LAYER OF HYDRATED CA SILICATE SO THAT THE
AMT. OF DISSOLVED CA(OH) SUB2 INCREASED AS THE SQUARE ROOT OF TIME.
FACILITY: MOSK. AVTO.-DOROZH. INST., MOSCOW, USSR.

UNCLASSIFIED

Acc. Nr:

APC054373

Abstracting Service:
CHEMICAL ABST. 6-76

Ref. Code:

UR 0032

114665n Ultrasonic method for studying the surface corrosion of solids. Dzenis, V.; Grabis, L.; Ratnov, V. B. (Mosk. Avto.-Dorozh. Inst., Moscow, USSR). *Intod. Lab.* 1970, 36(1), 36-9 (Russ). Piezoconverters contacting the edges of a sample were used to measure the propagation velocity of surface ultrasonic waves. At the same time, the propagation velocities of the longitudinal, C_l , and transverse, C_t , waves were also measured. These measurements, to obtain the desired accuracy, had to be made over a sample ≥ 10 cm. All samples used were $4 \times 4 \times 16$ cm. in size and utilized the same ultrasonic generator and piezoconverters. For all the materials studied, cellulose acetate, hardened cement, plaster and aerated concrete, and various mortars, C_l and C_t were essentially unchanged from their initial values (prior to exposure to the corrosive environment) in comparison to the values found on the corroded sample. For isotropic surfaces, the depth to which the surface waves penetrate a body is $\lambda_R \leq h_R \leq 2\lambda_L$, where λ_R is the wavelength and h_R is the penetration depth. Since these values can be correlated to the depth of corrosive attack, all the required measurements can be made on a single sample without any need for control detns.

Herman Koretzky

REEL/FRA
19831522

1/2 017
TITLE—AGE VARIABILITY OF HEMATOLOGICAL INDICES IN MICROTUS ARVALIS PALL
AND MICROTUS SOCIALIS PALL —U—
AUTHOR—RATKO, I.V.
COUNTRY OF INFO—USSR
SOURCE—VESTNIK ZOOLOGII, 1970, NR 3, PP 21-25
DATE PUBLISHED—70
SUBJECT AREAS—BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS—RODENT, BLOOD COUNT, HEMOGLOBIN, BIOLOGIC AGING
CONTROL MARKING—NO RESTRICTIONS
DOCUMENT CLASS—UNCLASSIFIED
PROXY REEL/FAME—3001/1948
CIRC ACCESSION NO—AP0127349
UNCLASSIFIED
PROCESSING DATE—30OCT70
STEP NO—UR/0575/70/000/003/0021/0025

PROCESSING DATE--30OCT71

UNCLASSIFIED

2/2 017

CIRC ACCESSION NO--AP0127349
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. IT WAS ESTABLISHED BY THE AUTHOR
THAT HEMATOLOGICAL INDICES (AN AMOUNT OF ERYTHROCYTES, LEUCOCYTES AND
HAEMOGLOBIN) IN MICROTUS ARVALIS PALL AND M. ROTUS SOCIALIS PALL CHANGE
WITH THE AGE OF ANIMALS. THESE CHANGES ARE DISTINCTLY PRONOUNCED AND
NATURAL. FACILITY: INSTITUTE OF ZOOLOGY, ACADEMY OF SCIENCES,
UKRAINIAN SSR.

UNCLASSIFIED

1/2 013 UNCLASSIFIED
TITLE--ON THE DIURNAL VARIATIONS OF OZONE -U-

PROCESSING DATE--16OCT70

AUTHOR--RATKOV, V.M.

COUNTRY OF INFO--USSR

SOURCE--IZVESTIYA AKADEMII NAUK SSSR, FIZIKA ATMOSFERY I OKEANA, 1970, VOL
6, NR 3, PP 278-284
DATE PUBLISHED-----70

SUBJECT AREAS--ATMOSPHERIC SCIENCES

TOPIC TAGS--DIURNAL VARIATION, OZONE, MESOSPHERE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1996/1076

STEP NO--UR/0362/70/006/003/0278/0284

CIRC ACCESSION NO--AP0118226

UNCLASSIFIED

2/2 013

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--APG118226

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A SERIES OF THE NUMERICAL
EXPERIMENTS IS PERFORMED ON THE DETERMINATION OF THE VERTICAL OZONE
PROFILE FOR THE DAY AND NIGHT MESOSPHERE. IT IS SHOWN THAT THE
CLASSICAL PHOTOCHEMICAL THEORY DOES NOT AGREE WITH THE RESULTS OBTAINED
BY GROUND OBSERVATION FOR THE NIGHTTIME CONDITIONS. A CONCLUSION IS
MADE THAT THE PRESENT METHODS ARE NOT ADEQUATE. THE DATA ON AIRBORNE
MEASUREMENTS OF OZONE CONTENT ARE GIVEN. FACILITY:
TSENTRAL'NAYA AEROLOGICHESKAYA OBSERVATORIYA.

UNCLASSIFIED

USSR

UDC: 616.988.75(A2)-036.22(474.5)

RATMANAYTE, L. M., STEBLIVSKIY, P. P., LAZAREV, O. P., ZABOLOTNOV, V. I., and KSHIVITSKAS, V. S., Vil'nius, Institute of Epidemiology, Microbiology, and Hygiene

"Characteristics of Immunological Shifts Among the Population of the Lithuanian SSR due to the Hong Kong Influenza Epidemic"

Moscow, Zhurnal Mikrobiologii, Epidemiologii, i Immunobiologii, Vol 48, No 6, Jun 71, pp 104-106

Abstract: The correlation between the intensity of influenza and the level of antihemagglutinins in the blood serum was studied. The 1969 epidemic, caused by influenza virus A2 Hong Kong 1/68, began in the second week of January and continued for 2 months. It was severe and distinguished by a large number of respiratory complications, surpassing in mass morbidity all of the influenza epidemics during the preceding decade. Serological investigation of 143 sera from members of organized collectives and 110 sera from the rest of the population, collected during November 1968, established the presence of anti-hemagglutinins only in a small number of sera with mean geometric titers of 1:14.8 and 1:9.8, respectively. During the epidemic the appearance of anti-hemagglutinins was accompanied by an increase of antibodies to virus A2-151/65.

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USSR

RATMANAYTE, L. M., et al, Zhurnal Mikrobiologii, Epidemiologii, i Immunobiologii, Vol 43, No 6, Jun 71, pp 104-106

This may be explained as an anamnestic response of the organism to a new virus variant. Serological investigations of sera obtained during the months of October-November, that is 8-9 months after the epidemic, established a low level of antihemagglutinins to virus A2 Hong Kong 1/63, with only 31.6% of the sera containing antibodies in a titer of 1:40 and higher. Higher titers of antibodies to virus A2 151/65 and V Dushanbe-66 were established in the sera. In all of the groups of sera studied, in the postepidemic period antihemagglutinins to the new antigenic variant of the virus were observed less often and also in titers lower than those to the preceding A2 virus variant.

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- 50 -

RATMANOV K.N.

~~SECRET~~

AA0043435

UR 0482

5

Soviet Inventions Illustrated, Section I Chemical, Derwent,

3-70

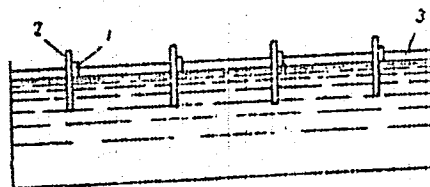
203921 A DEVICE FOR COOLING LIQUID SELF-HEATING
ANODE in electrolyzers for the production
of aluminium, by means of metallic ribs with their
bottom ends immersed in the liquid anode, is char-
acterised in that in order to control temp. along
the surface of the anode and to change over the
device without stopping the electrolysis, the
cooling ribs are made in the form of sections
freely fixed to the anode. These sections are
made of steel beams and plates made of copper,
aluminium or other highly conducting metals.
The proposed device consists of steel beams 1
and plates 2. The latter are fixed to the beams 1
and are immersed half-way down their length in
the liquid anode. The temp. of the liquid anode
can be controlled over its whole area by decreasing
or increasing the number of sections and also the
number of plates in the sections. This cooling
unit can be replaced by a new one without stopping
the electrolysis process. 6.2.67. as 113087/
22-1. M.A.KOROSOV et al. Irkutsk Aluminium Works
(4.7.69.) Bul.10/10.3.69, Class 40c. Int.Cl.C22d.

1/3

18

19761762

AA0043435



LD

2/3

19761763

AA0043435

AUTHORS: Korobov, M. A.; Shul'ts, B. V.; Yanko, E. A.; Ivanova, E. A.; Sobol', I. I.
Kostevich, D. N.; Ratmanov, V. N.; Kulakov, A. N.; Kits - Kuvazina, A. A.

Irkutskiy Alyuminiyevyy Zavod

19761764

3/3

USSR

UDC: 547.26'118.07

NIKOLENKO, L. N., ~~BATMANOVA, K. I.~~, TOLMACHEVA, N. S.

"A Method of Synthesizing Thymidine 5'-Monophosphate"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 13, May 72, Author's Certificate No 335251, Division C, filed 13 Jul 70, published 11 Apr 72, p 88

Translation: This Author's Certificate introduces a method of synthesizing thymidine 5' monophosphate by phosphorylating the corresponding nucleoside. As a distinguishing feature of the patent, the process is simplified by phosphorylating the unsubstituted nucleoside with an excess of β -cyanethyl phosphate in the presence of mesitylene sulfochloride.

1/1

USSR

UDC 547.963.3 + 547.853

NIKOLENKO, L. N., RATMANOVA, K. I., TOIMACHEVA, N. S.

"Synthesis of Thymidine-3',5'-diphosphate"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 9, Sep 70,
pp 2136-2137

Abstract: Phosphorylation of unprotected thymidine was carried out by excess β -cyanoethylphosphate in the presence of dicyclohexylcarbodiimide or mesitylene sulfochloride at 20° in pyridine. After ammoniacal hydrolysis the reaction mixture was separated on a cellulose column in a linear gradient of ammonium bicarbonate. Thymidine-3',5'-diphosphate can also be obtained by phosphorylation of thymidine-3'-(β -cyanoethyl)phosphate with an equimolar quantity of β -cyanoethylphosphate in the presence of mesitylenesulfochloride. The authors thank R. I. TATARSKIY for providing the enzyme S-nucleotidase.

1/1

USSR

UDC: 681.327.66:621.317.757

OFENGENDEN, R. G., RATMANSKIY, R. Yu., ANDREYEV, O. M., BEREZIN, F. N., DYSENKO, B. N., MATSKEVICH, G. G., ODINETS, G. S., SHALEYKO, M. A.

"A Pulse Analyzer"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obratzsy, Tovarnyye Znaki, No 11, 1970, Author's Certificate No 265951, filed 25 Jan 68, p 41

Abstract: This author's certificate introduces: 1. A pulse analyzer with memory device of the periodic type, based for instance on a magnetic drum. The analyzer contains an analog-to-code converter, memory unit record and playback amplifiers, a data output module, and a control unit. As a distinguishing feature of the patent, the analyzer is simplified by incorporation of a device which records tags for the beginning and end of isolated segments on an auxiliary field of the periodic memory, a unit which codes these tags with its output connected to the recording amplifier, a tag playback amplifier, a device for decoding the reproduced tags, and a unit which passes pulses located in the isolated segments and which is controlled by the decoding device. 2. A modification of this pulse analyzer which has the distinguishing feature of automatic generation of control signals when predetermined number values are accumulated in selected channels. The analyzer contains a device for recording the indicated numbers on an auxiliary field of the periodic memory in phase with the arrangement of the data

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USSR

OFENGENDEN, R. G., et al, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 11, 1970

accumulated in the corresponding channels. Also incorporated in this pulse analyzer is a comparison unit with its inputs connected to the circuit for playback of signals recorded on this field and to the playback amplifier for the information field, while its output is connected to the circuit which shapes the control signals when the accumulated information is equal to or greater than the predetermined numbers. 3. A modification of this analyzer which has the distinguishing feature of numerical integration of the data accumulated in the isolated segments of the band being measured. The output of the pulse pass unit is connected to the input of the comparison unit. 4. A modification of this analyzer which is distinguished by its ability to record additional information in the memory device during data accumulation. The unit contains a commutator whose control input is connected to the track of a synchropulse field on which a signal is recorded which divides the zones where the measured and auxiliary information are recorded on the memory unit of the analyzer.

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USSR

UDC 621.382.002 (088.8)

KOCHKAREV, G.V., KRACHKOVSKIY, O.I., LEYBOVICH, A.SH., CHAROVY, YU.S.,
PETRAKOVSKIY, YA.SH., SIDORENKO, L.D., LEVAKOV, V.P., GLADCHENKO, V.P.,
RATNEK, YU.A.

"Classifier Of Semiconductor Devices"

USSR Author's Certificate No 296150, filed 14 July 1969, published 18 May 1971
(from RZh--Elektronika i yeye primeneniye, No 3, March 1972, Abstract No 3B337)

Translation: The classifier of semiconductor devices (principally transistors) contains a unit [uzel] for connection of a device to the measuring equipment, the measuring equipment, logical equipment, mechanism for marking the polarity, and a unit for allocation of the measured devices into a container; it has a rotating tube connected with an electric motor. With the object of increasing the speed of operation and the efficiency of the classifier, the unit for connection, made in the form of a revolving reversible disk, supporting two blocks [kolodka] for the devices, diametrically located and connected by a flexible braid [zhgut] with the measuring device, and two withdrawing devices, mounted on the axis of the blocks, is partially arranged inside a guiding hopper, connected with the rotating tube of the unit for allocation, and under the disk of the unit for connection, in a groove of the lateral surface of the hopper, the mechanism for marking the polarity is located.

1/1

USSR

RATNER, A. L., RUZINOV, L. P., LAYNER, L. V.

"Search for Optimal Mixtures on Composition-Property Diagrams with Limitations"

Voprosy Kibernetiki. Nekotoryye Voprosy Planirovaniya Eksperimenta [Problems of Cybernetics. Certain Problems of Experimental Planning], Moscow, 1972, pp 91-96 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V296, by the authors).

Translation: In the performance of studies, it is frequently necessary to determine the singular points of a composition-property diagram. Usually, this is performed using approximation of the desired dependence by polynomials and analysis of the models produced. In this work, it is suggested that the optimal mixtures be sought using a gradient method, allowing the extremes or areas close to them to be found without preliminary adequate description of the entire response surface.

1/1

- 35 -

USSR

RATNER, A. I., ADLER, Yu. P.

"Some Transforms of Coordinates on Composition-Property Diagrams"

Voprosy Kibernetiki. Nekotoryye Voprosy Planirovaniya Eksperimenta [Problems of Cybernetics. Certain Problems of Experimental Planning], Moscow, 1972, pp 86-90 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V295, by the authors).

Translation: The use of experimental planning to describe areas of composition-property diagrams frequently leads to the production of models in which the variables are "pseudocomponents." Upon completion of the investigation, a transition frequently must be made to the basic system of coordinates. The purpose of this work is to show the possibility of this transition to a basic system of coordinates which retains the form of the model invariant.

USSR

UDC: 620.193.47

R
MINKAYLOVA, N. A., ZHUK, N. P., TURKOVSKAYA, A. V., ADLER, Yu. P., and
BATNEI, A. I., Moscow Institute of Steels and Alloys

"Corrosion Resistance of Aluminum in the Ternary Mixture: Acetic Acid -
Formic Acid - Water"

Moscow, Zashchita Metallov, Vol. 6, no. 4, Jul-Aug 70, pp 357-395

Abstract: The high corrosion resistance of aluminum in acetic acid, its low cost and good technological properties were the determining factors in selecting aluminum as the test object. The study involved A97, A6, and A6 aluminum grades, all differing in purity. Use was made of Scheffe's method of mathematical planning involving composition-property diagrams to obtain data for deriving equations of the relationship between the reaction rate of corrosion and the composition of the three-component mixture acetic acid-formic acid-water at temperatures of 22, 50, 70, and 90°C. Lines of equal corrosion rates in concentration triangles of the mixture were constructed for the tested aluminum grades and temperatures. The plotted equal corrosion rate lines in the concentration triangles demonstrate areas of various corrosion resistance and, consequently, areas of potential application of the tested aluminum grades in the ternary mixture.

1/1

USSR

UDC 621.375.9

DOROGAYA, L. N., ZIMOKOSOV, G. A., LEIKIN, A. Ya., RATNER, A. M.,
SOLOV'YEV, V. S.

"Simple Method of Operative Measurement of the Angular Divergence of a
Laser"

Moscow, Izmeritel'naya Tekhnika, No 4, 1973, pp 30-31

Abstract: A method is described for measuring the angular divergence of the emission of a continuous-action laser based on transformation of the divergence of the laser beam by a prism. The theoretical basis for the method is presented, and the parameters of the device are calculated. The possibility of using the method for the pulse-action laser is investigated.

The described method was used to measure the angular divergence of the LG-56 helium-neon laser with a wave-length of 0.63 microns. A prism with its base in the form of an equilateral right triangle was rotated by an electric motor with a frequency of 7.2 hertz. The receiver was the FAU-68 photomultiplier defined by a slit, the width and position of which were regulated by screws. The signal was transmitted from the photomultiplier to the S1-19 oscillograph. On synchronizing the scanning with the rotation frequency of the prism,
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USSR

DOROGAYA, L. N., et al., Izmeritel'naya Tekhnika, No 4, 1973, pp 30-31

clear pulses were observed on the oscillograph screen which reproduced the radiation pattern. With low pumping when only the basic transverse oscillation was observed visually in the near field, the shape of the pulse approached a gaussian curve. The halfwidth of the pulse recalculated for angles was $6' \pm 30''$, which agrees with the angular divergence of the basic mode field of $5'24''$ calculated by the well-known formulas. With an increase in the pumping current strength, when the higher transverse modes were visually observed, the pulse on the oscillograph screen revealed a corresponding broadened structure. The shape of the pulse does not depend on the linear width of the slit d or its position c in the region corresponding to a resolution of less than $2'$.

2/2

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1/2 019
UNCLASSIFIED
TITLE--MEASUREMENT OF THE CONSTANCY OF MAXIMUM ENERGY IN THE
BREMSSTRAHLUNG SPECTRUM OF A SYNCHROTRON -U-
AUTHOR--RATNER, B.S. R
COUNTRY OF INFO--USSR
SOURCE--PRIB. TEKH. EKSP. 1970, 1, 32-4
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS, NUCLEAR SCIENCE AND TECHNOLOGY
TOPIC TAGS--GAMMA SPECTRUM, BREMSSTRAHLUNG, SYNCHROTRON, PHOTONUCLEAR
REACTION, OXYGEN ISOTOPE/(U)FIAN SYNCHROTRON
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1991/1077
STEP NO--UK/0120/70/001/000/0032/0034
CIRC ACCESSION NO--AP0110767
UNCLASSIFIED

2/2 019

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0110767

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE STABILITY OF THE MAX. ENERGY IN THE BREMSSTRAHLUNG SPECTRUM E GAMMA, M OF THE SYNCHROTRON IS DETED. BY ABS. MEASURING OF THE YIELD OF THE REACTION ${}^{16}\text{O}(\text{GAMMA}, \text{N}) {}^{15}\text{O}$ IN THE PEAK REGION OF ENERGY, E GAMMA EQUALS 17.2 MEV. THIS METHOD IS IMPROVED BY USING RELATIVE MEASUREMENTS OF THIS YIELD INSTEAD OF THE ABS. VALUES. TWO POINTS ON THE PLOT OF E GAMMA, M VS. REACTION YIELD WERE USED. THIS METHOD RESULTED IN AN ACCURACY OF PLUS OR MINUS 2 KEY WITHIN 1 HR OF MEASUREMENT. THE SYNCHROTRON ENERGY MEASURED FOR A WHOLE MONTH REMAINED CONST. WITHIN THE ROOT MEAN SQUARE DEVIATION OF 1.7 KEV. SYNCHROTRON FIAT WITH A MAX. ENERGY OF ACCELERATED E OF 30 MEV WAS USED IN THE EXPT.

FACILITY: FIZ. INST., MOSCOW, USSR.

UNCLASSIFIED

1/2 024

UNCLASSIFIED

PROCESSING DATE--16OCT70

TITLE--USE OF A MATHEMATICAL STATISTICAL METHOD TO CALCULATE THE CROSS
SECTION OF THE PRIME16 O(GAMMA, N) PRIME15 O REACTION -U-

AUTHOR--(02)-IVANCHENKO, V.G., RATNER, B.S.

R

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. FIZ. 1970, 34(1), 175-8

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--STATISTIC ANALYSIS, EXCITATION CROSS SECTION, CALCULATION,
PHOTONUCLEAR REACTION, OXYGEN ISOTOPE, RESONANCE ABSORPTION, PARTICLE
ANNIHILATION, PHOTONEUTRON

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1988/0210

STEP NO--UR/0048/70/034/001/0175/0178

CIRC ACCESSION NO--AP0105286

UNCLASSIFIED

2/2 024

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0105286

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE INTENSITY OF ANNIHILATION PEAK WAS MEASURED VS. E SUBGAMMA IN THE RANGE 16.0-22.0 ME. THIS WAS AN EXCITATION CURVE WHICH STEP BY STEP WAS TRANSFORMED TO A CROSS SECTION CURVE BY USING THE X PRIME2 TEST. SIX RESONANCES AT 16.2, 17.21, 18.44, 19.53, 20.75, AND 21.72 MEV ARE FOUND; THIS IS IN A GOOD AGREEMENT WITH PREVIOUS PAPERS.

FACILITY: FIZ. INST. IM. LEBEDEV, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC: 616.981.57-085.835.3

RATNER, G. L., NENASHEV, A. A., SVECHNIKOVA, E. L., and SMIRNITSKIY, V. V., Department of Faculty Surgery, Kuybyshev Medical Institute imeni D. I. Ul'yanova

"Hyperbaric Oxygen Therapy of Anaerobic Infections (Communication I)"

Moscow, Khirurgiya, No 1, Jan 71, pp 39-44

Abstract: Eleven patients, most of whom were in serious condition because of gas gangrene resulting from careless primary surgery, were given hyperbaric oxygen treatments before surgery and, in cases where the infection flared up, after surgery. All of the patients recovered. Three amputations were performed, not as a result of the infection, but because the extremity was nonviable due either to injury to major blood vessels or to functional insufficiency of the extremity resulting from extensive skin and muscle defects. Several of the cases are discussed in detail.

1/2 023

UNCLASSIFIED

PROCESSING DATE--18SEP70

TITLE--MORPHOLOGICAL STRUCTURES OF MEDIUM PRESSURE POLYETHYLENE ARISING
DIRECTLY DURING POLYMERIZATION -U-

AUTHOR--(04)-EMIROVA, I.V., YERMAKOV, YU.I., NEVYANTSEV, I.A., RATNER, I.D.

COUNTRY OF INFO--USSR

SOURCE--VYSOKOMOL. SOEDIN, SER. B 1970, 12(1), 23-4

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--POLYETHYLENE, POLYMERIZATION, POLYMER STRUCTURE, ELECTRON
MICROSCOPY, CHROMIUM OXIDE, CRYSTALLINE POLYMER, SPHERULITE, MOLECULAR
WEIGHT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--1984/0925

STEP NO--UR/0460/70/012/001/0023/0024

CIRC ACCESSION NO--AP0055623

UNCLASSIFIED

2/2 023

CIRC ACCESSION NO--AP0055623

UNCLASSIFIED

PROCESSING DATE--18SEP70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ELECTRON MICROSCOPY OF MODERATE
PRESSURE POLYETHYLENE (I) OBTAINED BY THE POLYMER, OVER CRO SUB3 ON
SILICA GEL OR ALUMINOSILICATE SUPPORTS IN GAS PHASE, LIQ. PHASE, OR IN A
SOLVENT SHOWED THAT THE CRYST. FORM IS GOVERNED PREDOMINANTLY BY THE
MOL. WT. OF I. IN THE GAS PHASE SMALL SPHERULITES OR LENTICULAR
CRYSTALS, IN SOLNS. SPHERULITES, AND IN THE LIQ. PHASE LARGE NEEDLE
SHAPED CRYSTALS WERE OBTAINED.

UNCLASSIFIED

USSR

UDC: 661.143:621.397.13

GUGEL', B. M., RATNER, I. M.

"On Selecting Optimum Parameters of the Green Phosphor for Color Television"

Sb. nauch. tr. VNII lyuminoforov i osobo chist. veshchestv
(Collected Scientific Works of the All-Union Scientific Research Institute of Phosphors and Extra Pure Substances),
1971, vyp. 6, pp 50-60 (from RZh-Khimiya, No 17, Oct 72, Abstract No 17L170)

Translation: The authors calculate the color coordinates and luminescence yield in the green and white area of the color field covered by reference phosphors as the parameters of the green component are varied. It is assumed that the energy distribution by frequencies is described by a Gauss curve. The parameters corresponding to the equal-current mode are found, and the optimum parameters are chosen in accordance with a combination of maximum luminescence yield and the best color transmission.

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USSR

UDC 669.29:620.183

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R
TIRASPOL'SKIY, V. I., KOTLYAR, A. A., GRODSKIY, E. A., MIRONOVA, O. YA.,
RATNER, L. A., and SHPARO, N. B.

"Thin Structure and Properties of Deformed and Annealed Tungsten Single Crystals"
Sverdlovsk, Akademiya Nauk SSSR, Fizika Metallov i Metallovedeniye, Vol 29, No 1,
Jan 70, pp 175-179

Abstract: Structural changes occurring in tungsten single crystals during hot rolling and subsequent annealing were investigated. Using the methods of X-ray diffraction microscopy and by measuring the microhardness and residual electrical resistance at the liquid nitrogen temperature (78°K). The experimental technique and procedure for producing tungsten single crystals are described. X-ray photographs are presented of single crystal structure before and after rolling, and also of samples strained at 30% and annealed at various temperatures (1200 to 2400°). They show that the dislocation density inside the subgrains increases with strain, and at $\epsilon = 25\%$ the subgrain boundaries are no longer discernible. This state is conditionally characterized as prefragmentary. At $\epsilon = 27\%$ a qualitatively new fragmentary state occurs. The substructure and properties of deformed (up to 30%) tungsten single crystals after annealing at various temperatures are studied.

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USSR

TIRASPOL'SKIY, V. I., et al, Akademiya Nauk SSSR, Fizika Metallov i Metallovedeniye, Vol 29, No 1, Jan 70, pp 175-179

The variation of the residual electrical resistance and microhardness of samples deformed at 25 and 30% and annealed at 900° are presented in graphs and analyzed. The results show that hot rolling with 30% strain produces a prefragmentary or fragmentary substructure, depending on strain. The step-by-step annealing of single crystals with a prefragmentary substructure induces only relaxation and polygonalization. In the case of a fragmentary substructure it also induces recrystallization, which leads to a total softening and a perfect structure. Orig. art. has: 5 figures.

2/2

- 54 -

Veterinary Medicine

USSR

UDC 636.2:616.988.4

GOLOVCHENKO, A. P., Candidate of Biological Sciences, and PATNER, L. S.,
Candidate of Veterinary Sciences, All-Union Institute of Experimental
Veterinary Science

"Investigation of Pathogenesis and Immunity in Foot-and-Mouth Disease With
the Use of a Chronic Fistula in the Tracheal Lymph Duct"

Moscow, Doklady Vsesoyuznoy Ordena Lenina Akademii Sel'skokhozyaystvennykh
Nauk imeni V. I. Lenina, No 7, Jul 71, pp 38-39

Abstract: The role of lymph in the pathogenesis and immunogenesis of foot-
and-mouth disease was studied. Young cattle which never had the disease nor
were ever vaccinated against it were used. After preliminary surgery in
which a tracheal fistula was introduced into the lymph duct, the animals were
infected intradermally in the tongue with foot-and-mouth disease virus A₂₂ in
dose of 10^6 LD_{50/ml}. Within 3, 6, 12, 24, 47, 60, 72, and 96 hours after
infection, and 3, 4, 5, 6, 7, 10, 14, 21 and 60 days after the beginning of
convalescence, lymph from the tracheal lymph duct and blood from the jugular
were drawn and analyzed for the content of virus-neutralizing antibodies. It
was found that during viremia, the virus appeared in the lymph within 3-6 hr.
1.2

USSR

GOLOVCHENKO, A. P., et al., Doklady Vsesoyuznoy Ordena Lenina Akademii Sel'skokhozyaystvennykh Nauk imeni V. I. Lenina, No 7, Jul 71, pp 38-39

and in the blood 6-12 hr after infection. Virus content continued to increase, and the highest titer was recorded within 24 hr of infection. Virus titer than began to decline, until within 72 and 96 hr after infection, no foot-and-mouth disease virus could be found in either the lymph or the blood. Specific virus-neutralizing antibodies appeared in the lymph and blood 3-4 days after infection, continued to increase during convalescence, and remained in the blood and lymph for two months after infection (the observation period). The experiments thus established that both lymph and blood play a role in disseminating the virus and in building immunity. It was established also that the method of introducing a tracheal fistula into the lymph duct is one of the best methods of studying the role of the lymphatic system in the pathogenesis and immunogenesis of a number of animal diseases..

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1/2 030
UNCLASSIFIED
TITLE--DURABILITY OF ELASTIC PLASTICS UNDER UNIFORM STRESS -U-
PROCESSING DATE--02JCT70
AUTHOR--(02)-BROKHIN, YU.I., RATNER, S.B.
COUNTRY OF INFO--USSR
SOURCE--FIZ. KHIM. MEKH. MATER. 1970, 5(6) 754-6
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--POLYMETHYLMETHACRYLATE, POLYVINYL CHLORIDE, CALCULATION,
DIFFERENTIAL EQUATION, MATERIAL DEFORMATION, MECHANICAL STRESS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1992/0354
STEP NO--UR/0369/70/005/006/0754/0756
CIRC ACCESSION NO--AP0111548
UNCLASSIFIED

2/2 030

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0111548
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. A DIFFERENTIAL EQUATION (SIMILAR TO BAILEY'S EQUATION) WAS DERIVED FOR THE CALC. OF DURABILITY (THETA SUBB) AS A FUNCTION OF STRESS. INTEGRATION OF THE EQUATION GAVE AN APPROX. SOLN. FOR THETA SUBB. THE CALCD. THETA SUBB FOR PLASTICIZED POLY(ME METHACRYLATE) (I) AT 70DEGREES AND FOR POLY(VINYL CHLORIDE) (II) AT 55DEGREES WERE IN GOOD AGREEMENT WITH THE EXPTL. RESULTS. THUS, THE THETA SUBB OF I AND II SUBJECTED TO CONTINUOUS LOADING AT A CONST. RATE CAN BE EVALUATED FROM THE EQUATION DERIVED (BASED ON SUMMATION OF DEFORMATIONS).

UNCLASSIFIED

AA 0044279

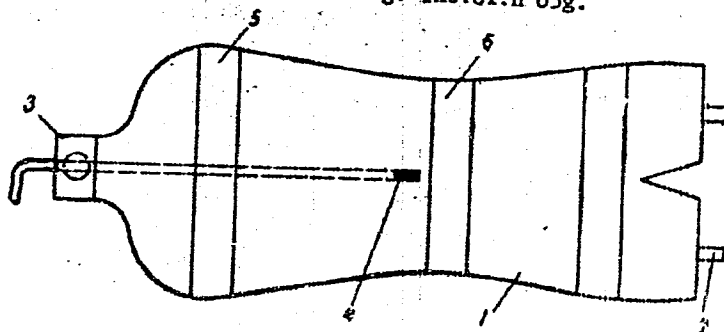
RATNER

76 UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent,

243743 PHANTOM for determination of gamma exposure dose is a watertight elastic bag in the shape of a man of average height, with a water inlet and outlet. An ionization chamber can be introduced to any desired point through a joint at the top. Breast, waist and hips can be adjusted to various sizes by belts which can be tightened.

8.2.62 as 763390/31-16.A.B. BIBERGAL et al. (28.7.69)
Bul 17/14.5.69. Class 21g. Int.Cl.H 05g.



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MT 21

19770811

AA0044279

AUTHORS: Bibergal', A. V., Nikulin, Yu. P., Ratner, T. G.

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19770812

USSR

UDC 621.565.93:428.84

GANIN, YE. A., KARICHEV, Z. R., LEBEDEV, V. F., RATNER, V. M., RAYETSKIY, A. S.,
SIMONOV, V. A.

"Experimental Thermoelectric Air Conditioner"

Moscow, Kholodil'naya tekhnika, No. 9, Sep 71, pp 12-15

Abstract: The thermoelectric room air conditioner developed by the authors that has thermobatteries with a coaxial flow of heat and electric current is described. The air conditioner consists of a thermoelectric battery unit, a power supply unit, and a system for automatically maintaining a given temperature level. Air conditioning occurs in the thermoelectric battery unit where the air is heated, cooled and cleaned of dust depending on the operating regime of the batteries. Air from the room is pumped through the battery unit as a result of rarefaction produced by a turbine fan and again enters the room. The hot junctions of the air conditioner are cooled by tap water. The thermoelectric battery unit consists of 24 batteries which are fastened in a circle on two bands of brackets forming a complete cylinder, with the internal diameter connected with the input opening of the turbine. The semiconducting materials of the thermocouples were the trinary alloys Bi Te Sb and Bi Te Se which are widely used in thermo-

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USSR

GANIN, YE. A., et al, Kholodil'naya tekhnika, No. 9, Sep 71, pp 12-15

electric refrigeration devices. The power supply of the thermobatteries was 220 amp and was chosen on the basis of their maximum cold productivity which was 90-100 kcal/hr. Tests showed that for a water temperature of 20°C and an air temperature of 25°C, the refrigeration capacity of the air conditioner was about 2200 kcal/hr. This required a power of 3.2 kW and the air was cooled in the conditioner to 9°C. When the air conditioner was used as a heat pump, tests showed that for temperatures of the cooling order of 6°C and air temperatures of 12°C, the amount of heat obtained was approximately 3100 kcal/hr. The air conditioner weighed about 100 kg. It is noted that despite the greater requirement for electrical energy as compared with compression air conditioners, the cost of using thermoelectric conditioners may be lower since the necessity for expensive maintenance and capital repairs is avoided.

- END -

CSO: 1861-W

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- 148 -

USSR

UDC 665.644.4.05

ASPEL', N. E., KISELEVA, E. A., and RATNER, YE. M., *Lengiprogas*

"Intensification of the Equipment for Catalytic Reforming for the Production of High Octane Gasoline"

Moscow, *Neftepererabotka i Neftekhimiya*, No 2, 1972, pp 3-6

Abstract: An analysis was performed of the positive and negative aspects in the utilization of the equipment for catalytic reforming. Some suggestions have been made which should lead to improved technology of the production, modernization of the plants and intensification of their utilization. The intensification could be obtained on existing equipment by slight modification of the process, or of the instruments, or by complete overhaul and modernization of the existing plants.

USSR

UDC 621.383.73

RATNER, YE. S. and MATSKOVSKAYA, YU. Z.

"The Spatial Filtering of Noise in Image Brightness Amplifiers"

Leningrad, Optiko-Mechanicheskaya Promyshlennost', No 2, Feb 73, pp 3-6

Abstract: A mathematical demonstration of a maximum in the signal to noise ratio for an electro-optical image brightness amplifier with spatial noise filtration, occurring on widening the dispersion function, is presented. Without spatial noise filtration the ratio is said to monotonally decrease. The maximum ratio is greater than that of an ideal system with a dispersion function close to the lambda function. In this case the dispersion function is approximated by a bell-curve. It is also concluded that the dispersion function should be minimal for some optimal portion of the test object.

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USSR

UDC: 621.378.329

GOMENYUK, A. S. and RATNER, Ye. S., Candidates of Sciences

"Spectral Characteristics of a Semiconductor Laser Using InAs"

Leningrad,
pp 16-18

Optikomekhanicheskaya promyshlennost', No 4, 1972,

Abstract: For the purpose of estimating the conditions of propagation of laser radiation and of determining some of the laser's parameters not easily available for direct measurement, the spectral characteristics of the radiation are determined for the time interval of a single pulse. As the object of their experiments in this study, the authors used a semiconductor laser of InAs, with injection excitation and a radiation band of the order of 300 Å. For their measurements, they used the fast diffraction spectrometer type SSIDS, with a recording frequency of 10,000 spectra per second and a resolution of 6 Å. The width of the single pulse during which the spectrum was recorded was 500 μs; a specimen of the spectrum is reproduced. It was found that there are not only variations in the radiated power during the pulse, but that the shift of the radiation toward the longer waves increases with increasing injection current. The authors were assisted in the experiments by V. M. Mel'nikov.

1/1

Powder Metallurgy

USSR

UDC 621.762.2.001:669.849

CHIZHIKOV, D. M., TSVETKOV, Yu. V., and RATNER, Yu. Ye.

"Kinetics of Reduction of Ammonium Perrhenate and Certain Properties of Rhenium Powder"

Metallurgiya reniya [The Metallurgy of Rhenium -- collection of works], Moscow, Nauka Press, 1970, pp. 116-119, (Translated from Referativnyy Zhurnal-Metallurgiya, No. 2, 1971, Abstract No. 2 G383 by the authors)

Translation: Metallic Re is produced by reduction of ammonium perrhenate with hydrogen. Therefore, the study of the kinetics of this process is not only of theoretical, but also of practical significance. It is established that the kinetics of the process follow the Roginskiy-Schultz equation. The intermediate products and metallic rhenium are formed in the process of reduction in the roentgenoamorphous state. It is believed that amorphous Re trioxide is formed as an intermediate product of the reduction of ammonium perrhenate. The influence of the conditions of the process (temperature, concentration of water vapor in the gas medium) on the particle size and purity of the metallic Re is studied. High-purity metallic Re is produced, in which the impurity content is 1-2 orders of magnitude lower than permitted according to the technical conditions. 3 figures; 1 table; 4 biblio. refs.

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USSR

UDC: 669.782.43

DOBROVOL'SKAYA, V. I., RATNIKOV, D. G.

"Modeling of the Heat Field in a Rod in the Process of Crucibleless Zone Melting on the EGDA-9/60 Electrical Integrator"

Tr. Vses. N.-I. i Proyeckt.-Konstrukt. In-ta Tokov Vysok. Chastoty [Works of All-Union Scientific Research and Planning-Design Institute for High Frequency Currents], 1973, No 13, pp 162-169 (Translated from Referativnyy Zhurnal Metallurgiya, No 8, 1973, Abstract No 8G199, by the authors).

Translation: A method is presented for modeling of the heat field in ingots with axial symmetry in the process of crucibleless zone melting on electrically conducting paper, considering nonlinear boundary conditions. Experiments on models are described, which define the heat field in an Si ingot in the zone of plasticity and produce the distribution of specific power over the length of the ingot, corresponding to the selected zone shape. 4 figures, 1 table, 4 biblio. refs.

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USSR

UDC 546.28

RATNIKOV, D.G., DOBROVOL'SKAYA, V.I., LEV, L.R.

"Electromagnetic Profiling During Non-Crucible Growth Of Silicon Crystals"

Tr. Vses. n.-i. i proyekt.-konstrukt. in-ta tckov vysok chastoty (Works Of The All-Union Scientific-Research And Planning-Design Institute Of High-Frequency Currents), 1972, Issue 12, pp 87-93 (from RZh: Elektrotehnika i energetika, No 6, June 1972, Abstract No 6B87)

Translation: A method is described of preparing Si crystals by the electromagnetic profiling method, at the base of which is located the technology of preparing single crystals of circular cross section by non-crucible pulling from the pedestal. A melting inductor was used as a shaper [formoobrazovatelya]. The current frequency was chosen for the condition of the maximum electrodynamic effect on the column of the melt at the crystallization front with a minimum thermal effect on the crystals being pulled. It is established that melting of the end of the pedestal and profiling of the crystals can lead to one and the same frequency by one and the same inductor. In the method developed, the requirement on the precision of production and the arrangement of the inductors is higher than with non-crucible melting and pulling of crystals of circular cross sections. 4 ill. 4 ref. V.I.Telyatnikov.

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USSR

UDC 621.315.592

BATNIKOV, D. G., DOBROVOL'SKAYA, V. I.

"Investigation of Some Induction Systems of Semiconductor Metallurgy"

Tr. Vses. n.-i. in-ta tokov vysok. chastoty (Works of the All-Union Scientific-Research Institute of High-Frequency Currents), Issue 10, pp 70-80 (from RZh-Elektronika i yeye primeneniye, No 3, Mar 70, Abstract 3B85)

Translation: Calculations are presented for the simplest induction system, consisting of a thin inductive coil encompassing an infinitely long cylinder. The layer of the current in the cylinder, and the active and reactive added resistance are determined. Various induction systems applicable with noncrucible zone melting are experimentally investigated. Recommendations are made with respect to the choice of optimum systems. 10 ill. 2 tables, 1 ref. Summary.

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USSR

UDC 678.5.01:537.311

RATNIKOV, E. N., POGOSOV, Yu. L., MEL'NIKOVA, G. A.

"Electrically Conducting Polymer Materials Based on Cellulose Esters"
Moscow, Plasticheskiye Massy, No 1, 1973, pp 34-35

Abstract: The results of studying electrically conducting materials based on various cellulose esters -- acetyl and acetobutyrate and acetopropionate cellulose -- are described. Data are presented on the effect of the graphite content, the thickness of the electrically conducting layer and the type of cellulose ester on the electrical conductivity of the cellulose ester and graphite system. A study is made of the thermal coefficient of the resistance of the system as a function of the modifying additives.

With an increase in the amount of graphite introduced into the system (to 55%) the contact resistance drops noticeably after which an insignificant decrease is observed. This content of electrically conducting additive is sufficient to stabilize the values of the contact resistance. The application of insulating layers of cellulose esters to a conducting polymer doubles the electrical resistance of the specimen which can be explained by the penetration of polymer molecules from the insulating layer into the conducting layer and destruction of the conducting chains.

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RAINIKOV, Ye. F.

JPRS 55303

29 February 1972

UDC: 621.039.524.2.034.3

THE EFFECT OF THE INITIAL GAS TEMPERATURE ON THE PARAMETERS

AND THERMAL EFFICIENCY OF NUCLEAR STEAM-AND-GAS INSTALLATIONS

[Article by Candidate of Technical Sciences Docent Ye. F. Ratinikov, of the

Brats Order of Labor Red Banner Polytechnic Institute, Moscow, Institute
Vsesoyuznykh Nauchnykh Ispytaniy. Inzheneriya, No 12, December 1971,
submitted 30 July 1970, pp 63-66]

In a nuclear steam-and-gas installation (Figure 1) the
initial gas temperature depends on the possibility of making
the basic equipment (the reactor and gas turbine) for the given
temperature conditions and can be in the broad range of 800-
1000°C, and even, in the long term, of 1200-1500°C.

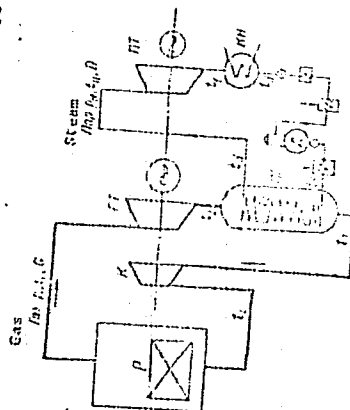


Figure 1. Schematic diagram of a steam-and-gas installation.

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UDC 621.039.524.2.034.3

RATNIKOV, Ye. F.

"Problems of the Construction of Atomic Steam-Gas Plants"

Moscow, Atomnaya Energiya, Vol 29, No 2, Aug 70, pp 77-80

Abstract: Some aspects of the construction of atomic steam-gas plants (ASGP) are discussed with reference to a schematic of a 500-Mw ASGP. An analysis of thermal and economical efficiency data of steam-gas plants is made and possibilities and conditions of producing high-temperature equipment for such plants are considered. The problem of selecting the working agent for the gas circuit is discussed and the expediency of using helium is outlined. A comparative analysis is presented of technical and economical characteristics of atomic power plants with a steam turbine cycle, a gas turbine cycle, and a steam-gas cycle. The analysis shows the technical and economical superiority of steam-gas plants and their increased economical efficiency with increasing initial gas temperature.

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Welding

USSR

UDC 621.791.1

NIKOL'SKIY, L. A., and RATOVA, N. V., Moscow

"On the Diffusion in the Pressure Welding of Light Alloys"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 1, Jan-Feb 72, pp 114-120

Abstract: The diffusion on the boundary of the initial metal and the welding rod metal was experimentally investigated in the pressure welding of aluminum alloys of different alloying systems. The width of the transition zone was found to be independent of the nature of the diffusing element (Cu, Zn, Mg), the welding heat in the interval of 440-480°C, and the heat treatment of the weld. The diffusion coefficient, determined according to Katano, is higher by a factor of 10^3 than the calculated value. With regard to the diffusion acceleration at the expense of plastic deformation, a value of the diffusion coefficient which is lower than the experimental value by a factor of 10 was derived. The dominant process in the development of the transition zone between the initial and the welding rod metals in pressure welding is not diffusion, but the plastic deformation, the development of which determines the weld properties. The diffusion has practically no effect on the weld properties in the welding of similar alloys. Four illustrations, one table, three formulas, ten bibliographic references.

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USSR

UDC 621.791.1

NIKOL'SKIY, L. A., and RATOVA, N. V., Moscow

"On the Calculation of Parameters of the Pressure Welding Process With Additive Metal"

Moscow, Fizika i Khimiya Obrabotki Metallov, No 1, Jan-Feb 71, pp 101-106

Abstract: On the basis of experimental data on investigations of the kinetics of the new technological joining process of light alloys, the pressure welding, and in accordance with physico-chemical welding characteristics in the solid state, functions are derived from which pressure welding conditions providing a strong joint can be determined. A diagram is given from which the optimum welding temperature and duration of the pressure welding operation of aluminum alloys may be selected.

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USSR

UDC 577.3

GUKASYAN, A. B., RATNIKOVA, N. V., and IVANOV, V. V., Forest and Wood Pulp Institute, Siberian Department, Academy of Sciences USSR, Krasnoyarsk

"Nuclear Spin Relaxation Studies of the Molecular Interactions Between the Organic Lattice and Adsorbed Water in *Bacillus thuringiensis* Spores"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, No 4, 1973, pp 599-602

Abstract: Studies were conducted on the effects of temperature on the state of water adsorbed to the organic lattice in the spores of *Bacillus thuringiensis*, through the determination of the rotational and translational proton relaxation times. The results revealed both weakly and strongly bound water molecules, and that there is exchange between the two phases. The former molecules diffuse through the lattice with an energy of activation of 2 kcal/mole, indicating virtually no interaction with the organic lattice. Bound water exists in a state different from that of ice structure; its structure is highly distorted and a number of the bonds are broken. The latter fact apparently is responsible for the exchange of the water molecules between the two phases. Since the proton-to-proton distances in the cavities were determined to be 7 Å, the adsorption sites consisted of carbonyl groups and 7 Å may be regarded as the minimum dimension of the lattice cavities.

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USSR

UDC 535.33/34

YAKUTINA, O. A., RATOVSKIY, G. V., TIMOKHIN, B. V., and FROLOV, Yu. L.,
Irkut State University and Irkut Institute of Organic Chemistry, Siberian
Branch, Academy of Sciences USSR

"Spectral Evidence for the Reaction of Trivalent Phosphorus With Unsaturated
Systems. I. Ultraviolet and Raman Spectra of Phenyldialkylphosphines"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), Vyp 8, 1972, pp 1733-1738

Abstract: The donor and the acceptor characteristics of phosphorus reactions with phenyl radicals were made by measuring the integrated intensity of bonds in the 1000 to 1600 cm^{-1} range of the Raman spectra and the UV spectra in the neighborhood of 220-280 nm . Both $\text{p}_{\pi}-\text{p}_{\pi}$ and $\text{p}_{\pi}-\text{d}_{\pi}$ interactions occurred. The introduction of the dialkylphosphine into a compound containing a benzene ring increased the integrated intensity at 1600 cm^{-1} (I_{1600}^{∞}) five times. Parasubstitution of chlorine increased I_{1600}^{∞} more than that of the methoxy group. The methoxy group had a greater influence on the I_{1600}^{∞} of triphenylphosphine than on the phenyldialkylphosphine. The UV spectra of phenyldialkylphosphines in the 260 nm region indicate that phosphorus tends to share its unshared electron during electronic excitation. Spectra in the 220-230 nm region in acid solutions indicate a transfer of charge to the vacant P orbitals.

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USSR

UDC 547.34

DOROKHOVA, V. V., RATOVSKIY, G. V., KOLBINA, V. Ye., GRECHKIN, Ye. F., and
KALABINA, A. V., Irkutsk State University imeni A. A. Zhdanov

"Spectral Manifestations of Intramolecular Interactions in Unsaturated
Phosphorus Acid Chlorides"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 10, Oct 73, pp 2172-
2178

Abstract: Bathochromic shifts observed in the UV spectra of β -phosphorus
substituted vinyl esters and styrenes as well as increased extinction co-
efficients ϵ and vibrational forces f of the absorption bands can be re-
lated to the interaction of phosphorus containing groups with the unsatu-
rated fragments. It was shown that the interaction of the unsaturated
fragment with PCl_2 , $P(O)Cl_2$, $P(S)Cl_2$ groups is expressed much stronger
than in respective unsaturated derivatives containing an alkyl radical at
the phosphorus atom. The 190, 225 and 260 mmicron bands in the phosphone
substituted vinyl alkyl and vinyl phenyl ethers and in styrenes are re-
lated to electronic transitions from the occupied π orbitals of unsaturated
fragments onto the orbitals containing in addition to the π orbitals of
the unsaturated fragment also vacant orbitals of the phosphorus containing
group.

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USSR

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RATOVSKIY, G. V., DOROKHOVA, V. V., FROLOV, YU. L., GRECHKIN, YE. P., and
KALABINA, A. V., Irkutsk State University imeni A. A. Zhdanov, Irkutsk,
Ministry of Higher and Secondary Specialized Education RSFSR; Irkutsk
Institute of Organic Chemistry, Irkutsk, East Siberian Affiliate, Sibe-
rian Department, Academy of Sciences USSR

"Interaction of Structural Groups in Molecules Containing a Phosphorus
Atom at a Double Bond"

Moscow, Doklady AN SSSR, Vol 190, No 5, Feb 70, pp 1124-1127

Abstract: The effect of phosphorus containing groups on beta-substituted
vinyl esters is manifested by a 20-30 cm^{-1} shift towards lower frequency
of the double bond valence vibration and a 3-4 fold increase in the inten-
sity of ν_{1620} . Presence of groups such as $-\text{PCl}_2$, $-\text{P}(\text{O})\text{Cl}_2$, $-\text{P}(\text{S})\text{Cl}_2$ in
vinyl aryl esters affects the characteristics of the phenyl ring, due to
the intramolecular interaction of the phosphorus group with π -electrons
of the $\text{C}_6\text{H}_5\text{CH}=\text{CH}-$ radical system. The intensity of the symmetric and
and antisymmetric vibrations of the $-\text{PCl}_2$ group changes considerably on
interaction with double bonds. Substitution of a phenyl radical for an

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RATOVSKIY, G. V., et al., Doklady AN SSSR, Vol 190, No 5, Feb 70, pp 1124-1127

alkyl radical almost doubles the $I_{460+490}^{\infty}$ value. Consequently, I_{450}^{∞} of the symmetric vibration line of the P-Cl bond in $-P(S)Cl_2$ increases in a series of butyl, phenyl, p-bromophenyl vinyl esters and in styrenes. The authors conclude that presence of a $POCl_2$ group should have an effect on the polarizability of π -electron cloud.

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